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ABSTRACT

This technology plan was developed by Southwest Virginia Community College (SVCC) in response to the Chancellor of the Virginia Community College System's goal to improve technology resources available on campus. The first section of this report introduces the SVCC General Technology Plan and how it fits into the college's vision for academic excellence. It also lists what results the plan should produce and what the goals of the SVCC information structure will include. The report also provides information about the applications and processes that will use technology and what benefits may be derived from this applications plan. The third section provides details of the infrastructure plan, stating that SVCCNet has been designed as a local area network that is fully functional and connected to the local, state, and international digital arena. Following this section is an outline of the college's technology spending plan for the fiscal year 1998-99. The spending plan tabularizes details about technology projects, area, equipment, unit cost, quantity, and total cost. The concluding section offers a "list of expectations" that SVCC intends to manifest at the end of June 1999. A glossary is provided at the end of this report. (VWC)

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ED 434 712

Southwest Virginia Community College

Technology Master Plan

Technology Master Plan

August, 1998

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Southwest Virginia Community College is a two-year institution of higher education established as a part of a state-wide system of community colleges. SVCC serves the residents of Buchanan, Dickenson (partial), Russell, and Tazewell counties. The college operates under policies established by the State Board for Community Colleges and the Local College Board. The institution is financed primarily by State funds supplemented by contributions from the participating localities.

Since the 1960's, much has changed at SVCC. We still have the same President, but we do not have the same technology. The influence of technology is everywhere on the campus. As an institution, we could not function in some areas without the use of the computer. As the college has grown and changed over the past thirty years, more formal administration of the college's computer resources were needed.

The Chancellor of the Virginia Community College System set a goal to improve the technology resources available on each campus, and SVCC was requested to prepare a comprehensive technology master plan. The following document is in fulfillment of this request. Comments about the plan should be directed to Dr. Richard Hudson at <richard_hudson@sw.cc.va.us>.

SVCC General Technology Plan

Southwest Virginia Community College's mission statement incorporates the initiation of programs which educate, train, and retrain citizens in our target area with the desire to become a leader in the development and utilization of technology. We are preparing our students to participate in a changing and complex society. Student and employee expectations are changing. Today's competitive climate demands new skills that combine higher education with life-long learning and economic diversity.

Our vision for the future is well grounded in academic excellence. As a campus, we aspire to become a fully integrated educational community. As a faculty and staff we aspire to fully integrate technology into our daily work life. Technology will enhance the way we do business from classroom delivery to administrative functions. Comprehensive strategic planning will result in a vision that motivates the college community to move forward with a shared sense of commitment and direction. This vision must be more than a published statement; it must be widely held. Not just a dream - but a reality.

Southwest Virginia Community College's Technology Master Plan will breathe depth and direction into the current technological environment. This document will outline the college's commitment to developing a change that is both ambitious yet attainable over the next two years. Our expectations for the plan should bring:

- renewed enthusiasm for teaching
- an increase in motivating our students
- better classroom instruction techniques
- increased accuracy in reporting results of student learning
- greater visual portrayal of complex subjects
- increased sharing of limited resources

- improved tools for administration
- improved classroom integration of multimedia, sound, graphics, video and animation
- superior teaching materials and resources
- access and use of the InterNet as an educational research tool
- improved learning
- world class learning environments

The SVCC information infrastructure will include a series of ambitious, yet attainable goals:

- The College administration will provide leadership and support to make integration a reality. Resources will be available, and all areas of the College will be included in the planning process to ensure maximum participation.
- The plan will focus on the College mission with emphasis on academic innovation.
- All on-campus buildings will be connected with a fiber backbone. Currently Buchanan, Tazewell, Russell, Dickenson, King, and the Community Center are connected with 24 multi-mode and 24 single-mode fibers connecting each building back to Tazewell Hall in an star configuration. The only building remaining to be connected with fiber is the Physical Plant Building
- All user spaces will be connected to this backbone with high speed lines to form an integrated information infrastructure known as SVCCNet. Currently all classrooms and all offices are connected with Category 5 cable for computer access, and 95% of our laboratories are connected with Category 5 cable.
- SVCCNet will connect to other network providers such as the VCCSNet and the InterNet.
- The infrastructure will support innovative teaching and learning with increased administrative efficiency.
- The infrastructure will extend support for remote access to our off-campus facilities. Currently three of our off-campus sites have access to SVCCNet, two utilizing ISDN dial up and one utilizing a 56K fixed line.
- The infrastructure will foster a stronger partnership with business and industry. Currently, SVCC has a technology partnership with Xerox.
- The plan will provide work-stations for college employees. Work-stations will include both hardware and software that will meet their specific needs. This must support the integration of the technology into work processes or work flow. Not every worker needs the same equipment, but we must invest in the proper tools to do the job.
- SVCC will continue to enhance and improve the use of its Web Page and increase the informational resources available to the college community. We will streamline and modernize management processes and systems. The new VCCS contract with People Soft and Oracle will make a system capatable with all VCCS colleges.
- SVCC will support a cooperative agreement to provide InterNet service to our faculty, staff, students, and community.
- The plan will support specialized lab and classroom equipment that will integrate the technology into the curriculum and will promote the use of computerized presentations and computerized student messaging.
- The plan will integrate 2-way interactive voice and video into the infrastructure and will support innovative uses of distance learning.
- Every SVCC student will have access to the technology needed to be successful in their studies. The College will encourage the use of

technology through leading by example. Time and location will cease to be barriers in attaining educational goals.

- Professional development of the faculty and staff will be supported. A formal training program is established for staff and a formal program will be established for faculty this year.
- The plan will promote a positive attitude toward the use of technology as a tool to meet the needs of the future and to hold SVCC as a world class provider of higher education in the Commonwealth of Virginia.
- Via the internet, faculty and staff can access the SVCC homepage, print on any Xerox networked machine from home. They also have a licensed home copy of Eudora for e-mail if they so choose.

Applications Plan

The following section provides information about the applications and processes that will use technology. Based upon our assessment, these initiatives can be identified and are mission driven applications (enabled by technology). Technology must be considered as an enabling tool to help meet the objectives of today and prepare us for the future. In addition, there will be other benefits identified from using technology.

- Every student registered will have access to information technology on the campus SVCCNet, the VCCS IntraNet, and the world wide InterNet. Workstations are available in classrooms, laboratories, and the LRC-library. There are three off-campus sites that have access to SVCCNet, two utilizing ISDN dial up and one utilizing a 56K fixed line.
- Every employee, who has the need or desire, will have access to information technology on the campus SVCCNet, the VCCS IntraNet, and the world wide InterNet. Currently 98% of all faculty and staff have a 486 microcomputer or better on their desk.
- Information Services will be charged with the administration of SVCCNet and the Technology Master Plan. Requests for service should be directed to their attention.
- Distance learning technology will be used to increase educational options by expanding programs and courses offered to increase educational opportunities.
- Instruction will be encouraged that uses network access techniques and resources such as VCCS IntraNet or InterNet, NOTIS, VIVA, or faculty customer developed modules. The InterNet plays a significant role in our plan. Use of video technologies is of great interest to our distance education program. We are involved with TELETECHNET and ODU's distance learning program. We currently have a student kiosk for student registration information. We are part of a two-way interactive network in Southwest Virginia.
- Instructional modules for asynchronous classroom use will be developed. Faculty will be encouraged to participate.
- Plans concerning the organization, policies, procedures and further implementation of technology based instructional modules will be developed by the Dean of Instructions staff which is made up of the Directors and Division Chairs. The Dean's Staff will develop these plans in consultation with personnel in their respective divisions and with SVCC's Teaching Learning and Technology Roundtable. Plans for outcomes measurement will be developed by the Student Outcomes Assessment Committee with the assistance of personnel from Audio-Visual and Distance Education Services. Assessment will ensure that comparable student learning is documented in technology based instructional modules and traditional classroom contexts.
- The technology support functions of customer services, technical services, and applications services will be a college wide objective. While the administration of these services is housed in Information Services, each faculty and staff member must promote the positive use of technology to make it a reality. Faculty and staff must commit the time and effort to integrate these tools into their daily lives.
- Two technical positions were created and filled in the first year of the plan. These positions are to provide technical support. The Repair Technician Senior position installs, modifies, and repairs computer hardware and software. A WebMaster "technical" support position is

responsible for all our web pages and web servers. In the second year of the plan, a "generalist" was added to coordinate and facilitate professional development in technology as well as instructional and administrative technological applications for all faculty and staff.

- Information Services will be reorganized to incorporate a client server philosophy with more attention to customer service. A work order system has been implemented and a help desk will be part of the reorganization. The new infrastructure will demand changes in the skills needed in the Information Services Department. A WebMaster approach instead of a data entry approach will be encouraged. Staff will become enablers and creators.
- SVCC provides general information via its home page. This page can be accessible through the VCCSNet and the world wide web. Widely used college publications such as the College Catalog, Student Handbook, policies and procedure manuals, Technology Master Plan, Campus Calendars, position announcements, campus maps, minutes of meetings, and other informational items. The SVCC WebPage will be the responsibility of the WebMaster with oversight of the Dean of Administration, Information Services Manager, Assistant to the President, and Director of Public Information. Our site is located on the world wide web at: < **http:www.sw.cc.va.us/>.**

- A formal program for professional development in technology will include applications tools and techniques needed to fully integrate technology into our daily lives. The Professional Development Committee will ensure that a wide variety of opportunities are available for both faculty and staff. Formal classes are arranged and faculty/staff are encouraged and supported to take these classes.

- Office suite applications are available for general use by faculty, staff, and students. Most faculty and staff have Microsoft Office which includes WORD, EXCEL, and POWERPOINT. The College has standardized on Eudora as its common e-mail package which is pop-3 mail compliant. Informed Forms will be used for administrative forms management. Students have access to many applications in our labs and in the library.
- General client server applications will be integrated into the current VCCS systems. We are seeking replacements to our suite of administrative applications. Most administrative applications are performed on main frame computers in Richmond. These legacy systems are inadequate and not meeting the needs of the administration. The VCCS systems office computer staff has the replacement of the systems as a high priority and it is part of their technology plan. Currently, we have 19 servers available. Many departments are sharing files and working on projects electronically.
- SVCC will use VCCS application models as they are published if they will meet our needs. We will identify additional applications and models for review and publishing.
- E-mail is provided for all college employees. E-mail accounts are available for all students, and this service is provided by the VCCS utility.
- Data archive and recovery has been established for all servers on the campus. This responsibility is charged to Information Services. We also archive and recover data on each workstation via the SVCCNet. A disaster recovery plan is in place.
- To provide much needed instruction in the operation of computers and software applications, the College has begun a professional development program to fill in the gaps between an individual's knowledge and where that individual needs to be in terms of expert operation of computer hardware and software. A subcommittee of the Professional Development Committee has worked to schedule workshops, seminars, and training sessions in topics that are used most frequently by faculty and support staff. Office computers have been upgraded to the most recent version of operating system software and every office has the latest version of Microsoft Office which includes Word, Excel, and PowerPoint. An organized class is in operation that meets twice a week to teach the software packages needed in the daily operation of the various college offices. A continuing career studies certificate has been approved for awarding to those successfully completing the requirements. As of August 15, 1998 sixty six (66) employees have completed Stage One Introduction To Learning Technology and twenty four (24) have completed Stage Two Continuous Learning and Self-Improvement. These are VCCS TechnologyBASICS Skills professional development initiatives.

- The College has conducted campus based Teaching, Learning, and Technology Roundtables to develop new instructional initiatives.
- The President will seek partnerships for leveraging resources with other organizations in the college service area.
- Information systems will be evaluated and retooled for the client server technology. We will focus on many of the following:

Student Information System related applications

- One card (debit card) applications
- Bookstore
- Library copy machine
- Laser printing in classrooms
- Employee and staff ID card (Implemented Fall 1998)
- Tuition and fee payments
- Miscellaneous payments

Student tracking applications via desktop

- Student IntraNet and InterNet access
- Continuing education applications
- Touch tone applications
- Registration
- Grades, admissions, financial aid, accounts receivable, etc.

Administrative Information System related applications

- Purchasing
- Parking fees or accounts receivable
- Campus Master Plan
- Jobs hot line
- Budget Centers On-Line
- Change Back System

Instructional Information System related applications

- Asynchronous education modules pilots

- Multimedia pilots - CD-ROM
- Multimedia pilots - continuous video streams
- Discipline data base of knowledge
- Collections of unpublished papers and course content documents
- Learning resources access

- Human Resources will begin a comprehensive records management program to help reduce the long term paper storage of the institution. A scanner, computer and CD drive will be available as a portable document storage station. The CD will have 'WORM' technology which is 'write once - read many' and is a permanent storage media. Funding for this project is on hold for now.
- Sponsored programs will be included in the technology plan and will follow the direction set forth in this document. However, funding for their hardware and software needs have not been included in this plan and should be provided by their special funds.

Infrastructure Plan

The SVCCNet has been designed as a local area network that is fully functional and connected to the local, state, and international digital arena. The design is based on maximum performance. Currently our network topology is based on a FDDI backbone using fiber optic cabling. This backbone spans most of the major buildings on campus. An older Apple LocalTalk network is also in place and provides service to the remaining buildings. We will expand this topology to a fully integrated switched ethernet and category 5 UTP copper connections.

- Cable, conduit, wire closets meet guidelines as published and accepted by the VCCS. Our fiber terminates in each building to a patch panel. The retrofitting of our existing buildings has resulted in non standard wire closets as walls etc. are already in place. Underground conduit systems campus wide have included all telecommunications media and future expansion is possible.
- Campus network electronics meet and exceed the guidelines published by the VCCS and the industry.
- The college connection to VCCNet meets the guidelines of the VCCS.
- The SVCCNet servers and services will meet guidelines of the VCCS.
- All offices on campus will be wired for accessibility to the campus network. We are adding all classrooms and labs as identified by the Deans or the President. Some classroom will be wired for ATM transmission.
- Information Services is the administrative office on the campus that is responsible for the technical support of the SVCC network and the faculty/staff workstations. Their Support staff is in place and the roles and responsibilities are clearly established. Current staff includes:
- Information Services Manager Full Time

  Computer Operations Technician Sr Full Time

  Installation/Repair Technician Sr Full Time

SVCCNet Manager Full Time

Computer Network Support Sr. Full Time

Graphics/CAD Programmer Part Time

Installation/Repair Technician Part Time

Wiring/Cabling voice/data/video Part Time

- Classroom and office desktop microcomputers will meet or exceed the VCCS guidelines.

College Technology Spending Plan

The following is the SVCC College Technology Spending Plan for fiscal year 1998-99. The spending plan contains the details about technology projects, the timetables, and proposed expenditures.

I. **ASSESSMENT OF CURRENT STATUS**

II. A. **Network Status**

B. 1. The current SVCC Campus Network is a FDDI backbone connecting Buchanan, Tazewell, and Russell, Dickenson, King Halls and the Community Center. Users in these six buildings are connected to the FDDI ring through FDDI to ethernet routers. There are 24 single-mode and 24 multi-mode fibers installed underground in water tight PVC conduit in place between these three buildings to provide growth for the future. The Physical Plant Building currently uses ethernet however the building is not connected with fiber.

2. The physical wiring system is a star design configuration with the hub located in Tazewell Hall. This design allows for multiple configurations with simple jumper changes.

C. **Desktop Status**

D. With the increased demand for access to campus-wide networks and the InterNet, SVCC has invested a large percentage of its past budgets in computing resources. About 35% of the computers are Macintosh and 65% IBM clone. We currently have a computer for everyone who has asked which is about 98%. While many are old and not meeting all the needs, each of the current computers have access to on campus e-mail. Over 30% of the computers do not meet the VCCS standard and will need to be replaced over the next year. Most of the College computer labs are 486 or higher processors. This plan will certainly utilize any existing technology that can be recycled; but, we will invest heavily in new technology for our primary mission - teaching. We have many off-campus sites with labs, classrooms and offices that also need to be upgraded.

E. **Server/Services Status**

SVCCNet currently has four Macintosh, four Novell and seven NT servers located on campus. Four additional NT servers are located at our off-campus sites. Some of these servers have been in service for over five years and have limited storage. There is some distribution of common applications. We have an extensive clip art library that is used by the campus for publications. The Macintosh servers will not meet the new specifications and will be replaced in this plan. Our network allows pier-to-pier networking so that most workstations can act as servers or clients. This feature has improved our networking ability.

III. IDENTIFICATION OF INITIATIVES

- The following budget is generally in rank order but we reserve the flexibility to adjust order and year to improve our plan. The figures show that we have more requests than we have dollars and we hope as an institution to fund the needs that have been submitted as part of the plan. Change is so rapid that we will try to evaluate each item of the plan as to the merit and the state of the technology as orders are prepared.

Southwest Virginia Community College					
Technology Master Plan 1998-99					
Project #	**Area**	**Equipment**	**Unit Cost**	**Qty.**	**Total Cost**
1	Backbone	DS3 ATM circuit monthly charge connecting SVCC to the Virginia Net	5,000.00	12	60,000.00
2	Information Services	Classified Positions Install & Repair Tech, HTML Programmer and Trainer, Faculty Position for Instructional Computing including all fringe benefits (3.5) Positions	168,899.00	1	168,899.00
3	Presidents Area	Professional Development	15,000.00	1	15,000.00
4	Business Division	Replace outdated computers in R136 with Pentium II 400's moving P5-100's to R239	2,300.00	16	36,800.00
5	Engineering Division	Replace outdated 386 microcomputers in K222, with Pentium II 400's to be used in the Electronics program and Cisco Academy	2,300.00	8	18,400.00
6	Math & Science Division	Replace outdated computers in T213 Biology lab with Pentium II 400's	2,300.00	6	13,800.00

7	Humanities Division	Classroom Presentation Package Microcomputer, ELMO, whiteboard and projector. This will create a Commonwealth classroom in the Humanities Division.	10,385.00	1	10,385.00

8	Engineering Division	Docking station and monitor for Gateway solo	1,000.00	3	3,000.00
9	Humanities Division / Business Office	New microcomputers in business office, transferring Macintoshes to Humanities Division. This will bring the business office in line for the new IHRIS system, the new SIS system and the new accounting system.	2,300.00	9	20,700.00
10	Dean of Instruction	Replace microcomputers in office	2,300.00	2	4,600.00
11	Distance Education	Laptop microcomputers to be used by faculty. Will be used with the LCD projectors below for classroom lectures and labs.	3,500.00	3	10,500.00
12	Distance Education	LCD Projectors to be used with laptops	5,000.00	3	15,000.00
13	Distance Education	NT Fileserver without monitor	1,800.00	2	3,600.00
14	Learning Resources	Microcomputers for library to be used with VIVA and NOTIS library systems	2,300.00	2	4,600.00

15	Distance Education	Microcomputers for division faculty and staff	2,300.00	3	6,900.00
16	Student Services	Microcomputers for faculty and staff	2,300.00	2	4,600.00
17	Human Resources	Update microcomputers with Pentium II 400's for the new IHRIS system.	2,300.00	2	4,600.00

18	Information Services	New fileserver for information services either NT or UNIX operating system	7,400.00	1	7,400.00
19	Information Services	Replace outdated microcomputers	2,300.00	2	4,600.00
20	Continuing Education	Replace outdated microcomputers	2,300.00	2	4,600.00
21	Humanities Division	Faculty microcomputer	2,800.00	1	2,800.00
22	Learning Resources	ELMO unit	2,500.00	1	2,500.00
23	Humanities Division	ELMO unit	1,500.00	1	1,500.00

24	Humanities Division	LCD Projector	4,500.00	1	4,500.00
25	Learning Resources	Upgrade to VTEL system	28,000.00	1	28,000.00
26	Learning Resources	Laser Printer	1,700.00	1	1,700.00
27	Learning Resources	Printer	768.00	1	768.00
28	Humanities Division	Replace laser printer in writing lab	2,813.00	1	2,813.00
29	Business Office	New microcomputers in business office. This will bring the business office in line for the new IHRIS system, the new SIS system and the new accounting system.	2,300.00	3	6,900.00

30	Information Services	Replace outdated microcomputers	2,300.00	2	4,600.00
31	Business Division	Classroom Presentation Package Microcomputer, ELMO, whiteboard and projector. This will create a Commonwealth classroom in the Business Division	10,385.00	1	10,385.00

32	Student Services	Microcomputer for faculty and staff	2,300.00	1	2,300.00
33	Business Division	Replace laser printer in AST program lab	2,813.00	1	2,813.00
34	Learning Resources	Microcomputers for learning assistance center	2,300.00	2	4,600.00
35	Math & Science Division	Classroom Presentation Package Microcomputer, ELMO, whiteboard and projector. This will create a Commonwealth classroom in the Math & Science Division	10,385.00	1	10,385.00
36	Learning Resources	Microcomputers for library to be used with VIVA and NOTIS library systems	2,300.00	2	4,600.00
					509,148.00

I. **LIST OF EXPECTATIONS**

At the end of the June 1999, it is expected that Southwest Virginia Community College will have achieved the following "list of expectations."

II. A. **Desktop/Classroom**

B. 1. Each full time faculty and staff member's workstation will meet technical or useful life definitions as established by VCCS guidelines.

2. The College will only purchase the most recent state of the art computers. Existing computers will be evaluated and if usable in

any location, will become part of this plan. Executive level administration will ask and determine needs for their respective areas.

3. All on-campus microcomputers will be connected to the campus network. Off-campus computers may connect via modem to the SVCCNet or the InterNet.
4. Faculty and staff members will use general office microcomputer tools on a regular basis to communicate with each other and with students.
5. The College will designate Commonwealth Classrooms that will meet the following: Create a minimum of two classrooms on campus that meet Commonwealth Classroom draft guidelines
6. One compressed video classroom on campus
7. One microcomputer for each 7% of student FTEs for student

C. **Network**

D. 1. The campus network meets VCCS guidelines for cable and service levels. The retrofit of existing wire closets will require exceptions to the guidelines due to current walls and structures.
2. The campus network is accessible in all campus locations (offices, labs, classrooms, auditoria, etc.).
3. The campus network is connected to VCCSNet following the System Office instructions. The campus will follow guidelines for electronics and network services for connection to VCCSNet thereby insuring operability and volume discount pricing for all participants.

E. **Servers**

F. 1. SVCC has a home page. Home pages will be managed for public relations and content accuracy. They will provide general college information services.
2. Network operating system (NOS) servers will meet VCCS guidelines.
3. E-mail (POP3 compliant) will be available for every faculty and staff.
4. Registration for services (e.g., E-mail) will follow the on-line registration application model which includes directory services, security, etc.
5. Impact and risk assessments have been completed to identify appropriate security, firewall, and disaster recovery processes that need to be installed based upon application models. This completes requirement to follow CIM's policy statement.
6. We will participate in the definition of business rules and requirements for a new student information system and administrative information system.

G. **Support**

H. 1. Computer literacy continues to be a driving force at SVCC. The College has committed past resources to buy hardware and software at sufficient levels to operate a successful system. The next phase is the attendant training of personnel to be competent operators of the system. The College views this professional development component as an on-going activity necessary for the whole system.
2. The Professional Development Committee has been charged with the task of providing opportunities for faculty and staff to obtain needed training updates. The Committee views this charge as very important and one that will enhance the productivity of the total institution. The availability of such training is vitally important to the successful operation of the automated network of information currently being mandated by technological change.
3. The organizational considerations for functional support have been assessed and will remain at the institution in Information Services. All staff will be functionally within the same department while they may be housed in various locations on the campus.

Distance learning will continue to be a part of AV. As the digital technology improves in the future each workstation will have the power to show full motion video and stereo audio. We will move away from the traditional AV as we know it and each workstation will have the capability to hear and view any media, at any time. This will eliminate the need for old technology but will bring a new need of available information resources. SVCC is part of a venture with the Southwest Education and Training Network.

4. Each faculty and staff member at SVCC has executed an Information Technology Employee Ethics Agreement and the VCCS Computer Ethics Guideline is available in many college administrative offices and the Library. The Guideline is also posted in all labs where computing is conducted as well as being published, in condensed form, in the College Catalog.

The following policies are part of this plan:

- Copyright compliance will be enforced.
- E-mail and other data files that are usually considered private will only be accessible by a member of Information Services. This information will remain confidential and will only be reviewed if requested from the President or Dean.
- sharing of instructional modules within VCCS will be encouraged.
- Guidelines for proper credit and payments of instructional modules is defined in the VCCS policy manual.
- Ownership of instructional modules developed at the College on College time is the property of SVCC.
- Personal home pages are not acceptable on College computers using Commonwealth resources. Individuals are encouraged to contact a local provider.
- Computer games are not permitted on College computers.

Glossary

applets Mini-programs that can be downloaded quickly and used by any computer equipped with a Java-capable browser.

ATM (asynchronous transfer mode) A high-speed cell-switching networking technology that can be scaled from 128 Mbps to more than six Gbps.

backbone A high-speed line or series of connections that forms a major pathway within a network.

bandwidth The range of frequencies that move along a communications link, such as a telephone line or cable-TV wire. The higher the bandwidth, the more information--whether voice, video or data--that can travel to your computer.

browser A software application that permits browsing, retrieval and viewing of content from the World Wide Web and intranets.

client A software application that makes requests of a server application for information or tasks to be executed by the server on behalf of the client; clients and servers communicate via specialized protocols.

Ethernet A networking technology that has any node on the network sending data at any time.

firewall A system or set of systems through which all traffic between an internal network and an external network (usually the Internet) must pass. A firewall allows only authorized traffic to continue to the other side, where "authorized" is defined by the firewall owner's security policy.

frame relay A wide area network technology that breaks data into variable-length frames and allocates bandwidth by demand.

ftp (file transfer protocol) A networking protocol for moving files between machines.

host A node computer on a network.

HTML (hypertext markup language) A software code for defining hypertext links between documents that has become the standard language of the World Wide Web.

HTTP Acronym for hypertext transfer protocol. HTTP is a networking protocol for retrieving HTML documents. The client software application used in HTTP transactions is a web browser.

Java A programming language developed by Sun Microsystems. Applets written in Java include their own software players, so you can download and run them on any computer.

LAN.(local area network) A network in which all hosts are in close physical proximity (roughly, within the same building or set of adjacent buildings).

packet A contiguous sequence of bits or bytes that make up all or part of a message communicated on a network.

PPP (point-to-point protocol) A protocol for making IP connections over a telephone line.

protocol An agreed-upon sequence of bits, bytes or characters exchanged between programs for purposes of transmitting and receiving information.

router A machine that forwards packets from one network to another.

server A software application that responds with requested information or executes tasks on the behalf of a client application. Also, a network host, such as a web server, running a set of protocol server applications.

SMDS (switched multimegabit data service) Subset of proposed ATM specifications that lets users dynamically configure data networks to match traffic patterns.

TCP/IP (transmission control protocol/Internet protocol) The driver software that connects PCS and networks to the Internet.

URL (universal resource locator) A URL is a sequence of characters used to denote the means for retrieving a specific document or a piece of content from a server on the Web.

Web Web, used as a noun, is shorthand for the World Wide Web.

web server A networked host computer that contains HTML pages and possibly other forms of content served to clients via HTTP.